

AMENDMENTS TO THE SPECIFICATION

On page 9, please replace the paragraph beginning on line 10 and ending on line 14 with the following amended paragraph:

Figure 15a (SEQ ID NO:1) shows the AMPK recognition motif. Bas and Hyd denote basic and hydrophobic residues, respectively. Figure 15b (SEQ ID NOS:2-7) shows an alignment of known AMPK substrates. The phosphorylation residues are shown in bold and residues fitting the recognition motif are underlined. Figure 15c (SEQ ID NOS:8-15) shows sequence alignments of the putative AMPK sites in TSC2.

On page 10, please replace the paragraph beginning on line 3 and ending on line 14 with the following amended paragraph:

Figures 17a-17eb show TSC2 plays roles for cell size control in response to energy starvation. Figure 17a shows 2DG decreases cell size in HEK293 cells. HEK293 cells were cultured in the presence of 12.5 mM 2DG, TSC2 RNAi, or 20 nM rapamycin for 72 hours. Cells were harvested and FACS analysis was performed to determine cell size. The X-axis indicates relative cell size. Cell size distribution curve of the control, as indicated by the gray curve, is included in each panel for comparison purposes. Figure 17b shows low glucose (2.8 mM) decreases cell size in HEK293 cells. Experiments are similar to those in panel A. ~~Figure 17c shows that AMPK dependent phosphorylation of TSC2 is important for the function of TSC2 in cell size regulation by energy starvation. The TSC2 / LEF cells stably expressing TSC2, TSC2-3A, and vector were cultured in 25 mM (upper panels) or 1 mM glucose (lower panels) containing media for 96 hours as indicated. Cells were harvested and FACS analysis was performed. Cell size distributions of G1 population are shown.~~

On pages 68-69, please replace the paragraph beginning on page 68, line 19 and ending on page 69, line 14 with the following amended paragraph:

In additional embodiments, experiments were performed to demonstrate the physiological relevance of AMPK phosphorylation of TSC2 in cell size control, and the effect of glucose limitation on cell size. Various concentrations of glucose were tested and it was found that 1 mM glucose is the lowest concentration that does not induce significant apoptosis